

Appl. No. 10/524,398
Amdt. Dated October 8, 2008
Reply to Office Action of September 4, 2008

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AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A liquid ejection apparatus comprising:

a line head having a plurality of liquid ejection unit heads, each unit head having a plurality of ink ejecting nozzles including two or more ink ejecting elements, the ink ejecting nozzles being arranged in groups by unit heads such that each unit head includes a single group of ink ejecting nozzles; ~~the liquid ejection apparatus comprising:~~

principal control means for separately controlling the each group of ink ejecting elements nozzles of each unit head based upon a nominal default operating condition for the respective unit head as manufactured such that substantially equal current is supplied to the ink ejecting elements; and

auxiliary control means for modifying the default operating condition for controlling at least one group of the ink ejecting nozzles elements of each of a plurality of unit head elements relative to the remaining groups of ink ejecting nozzles such that unequal currents are supplied to the ink ejecting elements of the at least one group of ink ejecting nozzles; and based upon a determined operating condition for the unit head which differs from the nominal operating condition for the corresponding unit head

storing means for storing the modified operating condition as the default operating condition for said at least one group of ink ejecting nozzles.

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2. - 11. (Canceled)

12. (Currently Amended) The apparatus according to Claim 1, wherein the liquid ejection apparatus comprises:

a liquid chamber for accommodating liquid to be ejected ~~associated with~~
at each ink ejecting nozzle element;

~~bubble generating means arranged within the liquid chamber for
generating bubbles in liquid contained in the liquid chamber by supplying
energy; and~~

~~a nozzle member having nozzles formed therein for ejecting liquid
contained in a corresponding liquid chamber; and~~

~~wherein the auxiliary control means controls liquid droplets to be ejected
in a direction different from that of liquid droplets ejected by the principal
control means by supplying energy to the bubble generating means in a
different way from that of the principal control means based upon a nominal
operating condition for the unit head.~~

13. (Currently Amended) The apparatus according to Claim 1, wherein the liquid ejection apparatus comprises:

a liquid chamber for accommodating liquid to be ejected associated with
each ink ejecting nozzle element;

a heating element arranged within the liquid chamber for generating
bubbles in the liquid contained in the liquid chamber by supplying energy; and

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~~a nozzle member having nozzles formed therein for ejecting liquid
contained in a corresponding liquid chamber, and~~

wherein a plurality of the heating elements ink ejecting elements are
juxtaposed in each liquid chamber in an arranging direction of the liquid
ejection parts unit heads, and

further comprising a circuit having a switching element connected
between the heating elements.

14. - 15. (Canceled)

16. (Currently Amended) A liquid ejecting method for controlling the
ejection of ink from a [[a]] line head arranged by longitudinally juxtaposing a
plurality of liquid ejection unit heads, each liquid ejection head having a
plurality of ink ejecting nozzles including two or more ink ejecting elements,
the ink ejecting nozzles being arranged in groups by unit heads such that each
unit head includes a single group of ink ejecting nozzles, the liquid ejecting
method comprising the steps of:

providing principal control means for ejecting separately controlling
ejection of liquid droplets from the nozzle of the liquid ejection part for each of a
plurality of unit heads based upon a nominal operating condition for the unit
head each group of ink ejecting nozzles based upon a default operating condition
for the respective unit head as manufactured such that substantially equal
current is supplied to the ink ejecting elements;

selectively enabling auxiliary control means to be executed for controlling

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~~the ink ejecting elements of each of a plurality of unit head elements based upon a determined operating condition for the unit head which differs from the nominal operating condition for the corresponding unit head~~ modifying the default operating condition for at least one group of ink ejecting nozzles relative to the remaining groups of ink ejecting nozzles such that unequal currents are supplied to the ink ejecting elements of the at least one group of ink ejecting nozzles; and

~~individually setting whether the auxiliary control means is executed for each unit head~~

storing the modified operating condition as the default operating condition for said at least one group of ink ejecting nozzles.

17. – 19. (Canceled)

Please add the following new claims:

20. (New) The liquid ejection apparatus as set forth in claim 1, further comprising detection means for detecting landing positions of ink ejected by said ink ejecting nozzles in a test pattern and using the results of the detection to determine the amount of modification to apply via the auxiliary control means.

21. (New) The liquid ejecting method as set forth in claim 16, further comprising a step of detecting landing positions of ink ejected by said ink ejecting nozzles in a test pattern and using the results of the detection to determine the amount of modification to apply via the auxiliary control selection

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step.

22. (New) The liquid ejection apparatus as set forth in claim 1, wherein said at least one group of ink ejecting nozzles utilizes said modified operating condition in all subsequent print operations.

23. (New) The liquid ejecting method as set forth in claim 16, wherein said at least one group of ink ejecting nozzles utilizes said modified operating condition in all subsequent print operations.

24. (New) The liquid ejection apparatus as set forth in claim 1, wherein said storage means is a memory element.

25. (New) The liquid ejecting method as set forth in claim 16, wherein said storing step includes storing the modified operating condition in a memory element.

26. (New) The liquid ejection apparatus as set forth in claim 1, further comprising a plurality of binary deflection control inputs for determining, step by step, an amount of deflection to be applied to a group of ink ejecting nozzles, and an analog deflection amplitude control input for varying the value of each step.

27. (New) The liquid ejecting method as set forth in claim 16, further

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comprising a plurality of binary deflection control inputs for determining, step by step, an amount of deflection to be applied to a group of ink ejecting nozzles, and an analog deflection amplitude control input for varying the value of each step.